

Title: Comparison of two visual acuity assessment tests in 3 to 6 year old children

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ABSTRACT

Objectives: Comparison of visual acuity assessment using the Cardiff visual acuity cards and the crowded standard Kay picture test and picture identification in the modified Kay picture test with the standard Kay picture test in children between the ages of 3 and 6 years.

Methods: A prospective cross sectional study was done in the department of Ophthalmology, CMC, Vellore. Children between the ages of 3 to 6 years, with visual acuity better than 6/36 in either eye as assessed by Cardiff acuity cards who permitted uniocular testing and consented to participate in the study were included. All children first underwent visual acuity testing by the Cardiff acuity cards for the right and left eye respectively. Following this, the picture identification test was performed, using the better eye, using the uncrowded standard Kay and the modified Kay pictures, using time taken to identify the picture correctly as a measure. The children then underwent visual acuity assessment using the crowded standard Kay picture test, for the right and left eye respectively. The data was collated and analysed with appropriate statistical methods.

Results and Conclusions: In this study, 320 children met the inclusion criteria and were recruited. There was a statistically significant difference (p - value < 0.001) between the mean visual acuity as assessed by Cardiff acuity cards and the standard crowded Kay picture test in children between the ages of 3 and 6 years and our study showed that in this age group of children, Cardiff acuity cards did not over-estimate visual acuity as compared to the standard crowded Kay picture test. The time taken to complete visual acuity testing was faster with the modified crowded Kay picture test than the standard crowded Kay picture test ($p < 0.001$). Out of the 4 modified pictures, 3 pictures were identified faster in the modified Kay test than the standard Kay test by children in our clinical setting. When the overall time taken to identify pictures by school going (266) and non school going (51) children was compared, school going children took lesser time (1.88 seconds) in comparison to non school going children (2.30 seconds). (p - value = 0.59).

Key words: Visual acuity, Children, Crowding, Cardiff acuity cards, Kay pictures test, standard and modified Kay pictures